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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS

#12  
H.B.  
3-28-81

In re application of

Jean Y. Chenard et al

Serial No. 070,503

Filed: August 28, 1979

For: STABILISATION OF HALOVINYL RESINS

J EXAMINER

APR 6 1981

New York, New York

Group Art Unit 143

Examiner: V.Hoke

March 10, 1981

Hon. Commissioner of Patents and Trademarks  
Washington, D. C., 20231

486-14

APPEAL BRIEF

Sir:

In view of the Patent Office's extension of time for filing an Appeal Brief of only five (5) days in response to applicants' Petition to extend the brief date which indicated that a decision to re-file the application incorporating further experimental results had been made, this Appeal Brief is submitted.

The Appealed Claims

A copy of the appealed claims are set forth in an appendix to this Brief.

The Rejection

Claims 14-18, 21-24 and 26-28 were rejected under 35 USC 102 and all appealed claims were rejected under 35 USC 103 over Gough et al, U.S. Patent 3,928,285.

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### Argument

The Gough reference relied on by the Examiner relates to the same subject matter as the present invention, i.e., the stabilization of a halogen containing resin and discloses that it is known in the art to use organic thiols, hindered phenols, tin carboxylates, organotin carboxylates and organotin mercaptides as stabilizers for such resins. The patent further indicates that it was previously known that the combination of an organic thioanhydride and a monohydroxy carbonyl tin compound could be used. The Gough patent itself teaches a synergistic stabilizer composition which contains an organotin borate and an organic thiol.

In direct contrast to the cited patent, the claimed invention relates to the combination of known conventional stabilizing agents with a carboxylic acid ester containing a mercaptan function in the alcohol residue thereof. The applicants' invention does not relate to the combination of a thiol with a borate which is the essence of the Gough patent.

The Examiner has taken the position that applicants' recitation of a metal containing stabilizer is insufficient to distinguish from the reference's organotin borates since the former class is generic to the reference's materials. Such reasoning is clearly not applicable to Claims 17 and 26-28. Claim 26 (and thereby Claims 27-28) recites specifically the conventional stabilizers by means of a Markush group and no organotin borate is recited. Claim 17 recites that the stabilizer is selected from a particular Markush group which also excludes the reference's organotin borate. The remaining claims refer to a "metal containing stabilizer" which also excludes the organotin borates of Gough.

Gough does teach esters falling within applicants' formula in its broadest aspects under certain limited conditions where j is 0 and h is 1 in formula g. However, Gough offers the artisan a choice of four general formulas in which some of the moieties are not defined with any greater specificity than "aliphatic" or "aromatic". The huge number of thiols disclosed

by the reference would not lead those skilled in the art to applicant's compounds or suggest to those skilled in the art that applicant's compounds could be used with conventional stabilizers to improve the activity thereof. Also, Gough teaches a synergistic combination of an organotin borate and an organic thiol. There is no suggestion that any organic thiol described therein would provide advantages when used in conjunction with a material other than an organoborate.

Applicants' sulfur containing materials are not used in conjunction with a stabilizer containing the metal boron. Applicants' esters can be added to non-tin stabilizers and obtain a significant stabilization, a wholly unexpected feature of the invention. See Examples 12-21. A further surprising and unexpected result lies in the improvement of the viscosity during working due to the addition of the mercaptoalkyl esters.

Clearly, the claims are not anticipated or rendered obvious by the Gough patent.

#### Conclusion

It has been shown above that the Examiner's final rejection is untenable and reversable thereof is respectfully solicited.

An oral hearing is respectfully requested.

Respectfully submitted,

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D. C. 20231, on March 12, 1981

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CLAIMS ON APPEAL

14. In a method of stabilizing a halogen containing resin to heat or light by the incorporation therein of a metal containing stabilizer, the improvement which comprises additionally incorporating therein an organic carboxylic acid ester containing a mercaptan moiety connected to a carbon atom of the alcohol moiety of said ester.

15. The improved method of claim 14 in which the amount of ester is from 0.1-5% by weight of said resin.

16. The improved method of claim 15 wherein the amount of said ester is 0.5-2% by weight of said resin.

17. The improved method of claim 15 in which the methyl of said metal containing stabilizer is selected from the group consisting of tin, antimony, zinc, magnesium, alkaline earth metals and alkali metals.

18. The improved method of claim 14 wherein said ester is of the formula  $\text{RCOO-R'SH}$  wherein  $\text{R'}$  is a hydroxyl substituted or unsubstituted 1 to 18 carbon atom alkylene group and  $\text{R}$  is a substituted or unsubstituted alkyl, alkenyl, aryl or aralkyl group of at least two carbon atoms in which said substituent is  $-\text{COOR''}$ , where  $\text{R''}$  is  $\text{H}$  or  $-\text{R'SH}$ .

19. The improved method of claim 18 in which  $\text{R}$  contains 8 to 18 carbon atoms.

20. The improved method of claim 19 in which  $\text{RCOO-}$  is a fatty acid residue of caprylic, perlargonic, capric, undecanoic, lauric, myristic, palmitic or stearic acid.

21. The improved method of claim 19 in which RCOO- is derived from an aliphatic or aromatic diacid.

22. The improved method of claim 21 wherein said diacid is selected from the group consisting of succinic, adipic or phthalic acid.

23. The improved method of claim 18 in which R'SH is derived from a 2 to 6 carbon atom mercapto alkanol.

24. The improved method of claim 23 in which said mercapto alkanol is selected from the group consisting of 1-mercapto-ethanol-2, 1-mercapto-propanol-3, 1-mercapto-2-hydroxypropanol-3 and 1-mercapto-butanol-4.

25. The improved method of claim 14 wherein said ester is mercaptoethyl stearate and said metal containing stabilizer is selected from the group consisting of calcium stearate, organic tin stabilizer, and antimony tri-mercaptide stabilizer.

26. A method of improving the stabilization to heat and the viscosity characteristics of polyvinylchloride comprising incorporating therein (a) at least one conventional stabilizer selected from the group consisting of di-n-octyltin-bis(isooctyl-mercapto-acetate), butyl stannic acid, butyl thiostannic acid, copolymer of butyl stannic acid and butyl thiostannic acid, di-n-butyltin-bis(isodecyl-mercapto acetate), antimony-tris(isooctylthioacetate), zinc stearate and calcium stearate, and (b) a mercapto alkyl ester of the formula RCOO-R'SH in which RCOO- is the residue of a 14, 16 or 18 carbon atom fatty acid and R' is ethyl or glyceryl.

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27. The method of claim 26 wherein the amount of said (a) stabilizer is 0.05-1% by weight of said polyvinylchloride and the amount of said mercaptoalkyl ester (b) is 0.5-2% by weight of said polyvinylchloride.

28. A plastic mass of polyvinylchloride stabilized by the method of claims 14 or 26.